DOCUMENT RESUME

ED 208 198 CE 030 310

TITLE	Statewide Curriculum Development Project: Needs Assessment Stage. Final Report, July 1, 1980-June 30, 1981.
INSTITUTION	New Jersey Vocational-Technical Curriculum Laboratory, New Brunswick.
SPONS AGENCY	New Jersey State Dept. of Education, Trenton. Div. of Vocational Education.
PUB DATE	Jun 81
NOTE	98p.
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	Community Surveys; Curriculum Development; Data Collection; *Disabilities; *Educational Needs; Educational Planning; Models; *Needs Assessment; Postsecondary Education; Questionnaires; Research Methodology; Secondary Education; Sex Stereotypes; *Special Education; Statewide Planning; Urban Education; *Urban Environment; *Vocational Education
IDENTIFIERS	New Jersey

ABSTRACT

A literature search in the area of vocational education for special needs persons indicated a lack of a needs assessment survey that would help identify the problems of the urban handicapped population in terms of the influence of the total environment on this population. Therefore, a research effort was made with the following objectives: (1) the formative development of a statewide curriculum needs assessment model compatible with the data collection systems in New Jersey; and (2) the application of project findings to the satisfaction of identified needs. The target population consisted of the key people who directly affect the environment of the urban handicapped student population: employers, parents, handicapped students, special education teachers, coordinators, administrators, and child study teams. A survey instrument was developed, tested by representatives of these groups in a college class, then more widely administered. Data also was collected from state and federal data bases and 21 site visitations to vocational schools. All survey items were field tested to assess the level of validity and reliability before incorporation into the final needs assessment model. The model developed was significant in that it provided a systematic approach to the consideration of a host of variables affecting curricular decisions in vocational education. A distinguishing feature of this model is its ability to react to all program areas of vocational education in an equal fashion. (KC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

SEMG 188

ED208198

FINAL REPORT

STATEWIDE CURRICULUM DEVELOPMENT PROJECT: NEEDS ASSESSMENT STAGE

1980 - 1981

N.J. Vocational-Technical Curriculum Laboratory
Bldg. 4103 - Kilmer Campus
Rutgers University
New Brunswick, NJ 08903
(201) 932-3845

Project Director
Chester P. Wichowski, D.Ed.

CE030310

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

L. Page

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

This project reported herein was conducted pursuant to a contract from the New Jersey Department of Education, Division of Vocational Education and Career Preparation. It was funded under Section 133 of Public Law 94-482.

Project Duration: July 1, 1980
Beginning Date

June 30, 1981
Ending Date

The Contractors undertaking this project were encouraged to express fully their judgments in professional and technical matters. Points of view or opinions do not, therefore, necessarily represent official funding agency positions or policies.

OFFICIAL USE ONLY

IDENTIFICATION NO._____ AMOUNT FUNDED_____

FUNDED UNDER SECTION_____OF P.L. 94-482

PROJECT TITLE: Statewide Curriculum Development Project: Needs Assessment Stage

LEGAL NAME OF APPLICANT DISTRICT, INSTITUTION OR AGENCY: N. J. Vocational-Technical Curriculum Laboratory

ADDRESS: Bldg. 4103, Kilmer Campus, Rutgers University

New Brunswick, NJ 08903

PROJECT DIRECTOR: Dr. Chester P. Wichowski

TELEPHONE NUMBER: 201 932-3845
(Area Code)

ABSTRACT

The objectives of this research effort included: (1) the formative development of a statewide curriculum needs assessment model compatible with the data collection systems in New Jersey and (2) the application of project findings to the satisfaction of identified needs.

Six weighted community-based variables and fifteen unweighted school-based variables were included in this multi-dimensional model. Community-based data were collected through a two stage DELPHI survey and from selected State and Federal data bases. School-based data were collected through 21 site visitations to vocational schools by research teams using a curriculum rating schedule designed specifically for this activity. All data were mathematically interfaced to provide a rank-ordered listing of program titles based on calculated statewide need. A State level executive decision-assisting review of empirical findings and recommendations was the final element of this model.

The model developed was significant in that it provided a systemic approach to the consideration of a host of variables affecting curricular decisions in vocational education. A distinguishing feature of this model is its ability to react to all program areas of vocational education in an equal fashion. Further, findings of this model can also be applied to long range policy planning, facility development and space utilization.

ACKNOWLEDGEMENTS

The director of this project has taken this opportunity to acknowledge his immediate staff who assisted in this research and development effort. The assistance and contributions provided by the project graduate assistants, Mr. Otto Behrens, Ms. Jill Peterson-Fogle and Mr. Thurman Hux and the project secretary, Mrs. Rae Frank greatly contributed to the successful completion of project goals.

The suggestions and supportive efforts provided by the project advisory council is also acknowledged. Also recognized for their assistance in the collection of data are Dr. Joh Drdak and Mr. Joseph Guiliano, Principal Labor Market Analysts, Bureau of Labor Statistics, U.S. Department of Labor, and Mr. Dennis Reiter, Assistant Director Bureau of Management Information Services, Division of Vocational Education and Career Preparation, N.J. State Department of Education, as well as the administrators and staff members of the vocational schools visited.

Advisory Council Members

Doris Bryant
Coordinator of Career Ed./Ind.Arts
Office of Career Education
New Brunswick High School

Frederick Cappello, Director
Vocational Curriculum & Media Development
State Department of Education

Shirley Cathie
Career Ed. Coordinator
EIC - Central/Edison

Warren Downey, Director
Center for Occupational Education
Jersey City State College

Steven Director, Director
Human Resource Center
Cook College

Joseph English, Director
Gloucester County Vocational Sch.

Jerome Gold, Director
Deptford Area Vocational School

Joseph F. Kelly, Director
Bureau of Occupational Research
NJ State Department of Education

William McKinlay, Chairperson
Public Relations Manager
NJ Bell Telephone Co.

Rosalie C. Risinger
Assistant Superintendent
Essex County Vocational School

Carl J. Schaefer, Chairperson
Dept. of Vocational-Technical Education
The Graduate School of Education
Rutgers University

Tony Staninas, Instructor
Cooperative Education Program
Parsippany Hills High School

Sandra Thiel, Instructor
Allied Health Division
Mercer County College

Frank Verheul, Principal
John K. Ossi Vocational-Tech School

Leonard A. Westman, Superintendent
Lower Camden County Regional School

TABLE OF CONTENTS

ABSTRACT..... i
ACKNOWLEDGEMENTS..... ii
LIST OF TABLES..... iv
LIST OF CHARTS..... vi

I. INTRODUCTION..... 1

Curricular Influences..... 1
Background..... 2
Project Goals and Developmental Stages..... 4
Statement of the Problem and Objectives..... 4
Scope and Limitations..... 5

II. PROCEDURE..... 7

Introduction..... 7
Design of the Study..... 8
Demographic Importance..... 9
The Population..... 10
The Research Instruments..... 11
Analysis of Survey Data..... 12
Demographic Data..... 13
Calculation of Demographic Importance..... 13
Educational Need..... 16
The Population..... 16
The Research Instrument..... 16
Data Collection and Analysis..... 19
Calculation of Educational Need..... 19
Utilization of Empirical Findings..... 20
Dissemination Activities..... 21
Reduction of Sex Role Stereotyping..... 21

III. FINDINGS..... 22

Introduction..... 22
Part I: Demographic Importance..... 23
Part II: Educational Need..... 24
Greatest Calculated Statewide Need..... 29
Curriculum Needs Assessment Model..... 29
Ad Hoc Findings..... 32

IV. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS..... 34

Summary..... 34
Conclusion..... 38
Recommendations..... 39

V. APPENDIX A..... 42
APPENDIX B..... 51
APPENDIX C..... 64

LIST OF TABLES

Table		Page
1	Conversion Matrix: Occupational Titles Identified Through Second Stage of Delphi Survey - OE/VEDS Titles	14
2	Listing of Vocational Program Titles Reviewed	17
3	Decision-Making - Importance Factor Weights (IFW) Identified Through First Stage of Delphi Survey (N=122)	23
4	Ratings of Curricular Characteristics	25
5	Rank Order Listing of Vocational Education Program Specific Titles with Highest Calculated Statewide Need	30
6	Data Base and Demographic Importance Factor Development in Business Education - Secondary Level	52
7	Data Base and Demographic Importance Factor Development in Business Education - Post Secondary Level	53
8	Data Base and Demographic Importance Factor Development in Vocational Industrial Education: Secondary	54
9	Data Base and Demographic Importance Factor Development in Vocational Industrial Education: Post Secondary	55
10	Data Base and Demographic Importance Factor Development in Health Occupations Education: Secondary Level	56
11	Data Base and Demographic Importance Factor Development in Health Occupations Education: Post-Secondary Level	57
12	Computational Data Base for Business Education: Secondary Level	58
13	Computational Data Base for Business Education: Post-Secondary Level	59
14	Computational Data Base for Health Occupations Education: Secondary Level	60
15	Computational Data Base for Health Occupations Education: Post-Secondary Level	61
16	Computational Data Base for Vocational Industrial Education: Secondary Level	62
17	Computational Data Base for Vocational Industrial Education: Post-Secondary	63
18	Listing of Textbooks and Origin of Curriculum Materials Identified Through Site Visitation Review in Business Education	65

Table		Page
19	Listing of Textbooks and Origin of Curriculum Materials Identified through Site Visitation Review in Health Occupations Education	69
20	Listing of Textbooks and Origin of Curriculum Materials Identified through Site Visitation Review in Vocational Industrial Education	71

LIST OF CHARTS

Chart		Page
1	Descriptive Profile for Business Education Curriculum Materials Reviewed.....	26
2	Descriptive Profile for Health Occupations Education Curriculum Materials Reviewed.....	27
3	Descriptive Profile for Vocational-Industrial Curriculum Materials Reviewed.....	28

Section I

INTRODUCTION

Curricular Influences

Economic, technological and social changes have had a significant influence on the delivery of vocational education and the subsequent demands on curricular needs in recent years. Further, these change elements have had an affect on all considerations associated with the decision-making process used in the allocation of resources to meet educational objectives.

Domestic inflation has exhibited an ever increasing spiral growth pattern on the economy since the beginning of the United States involvement in Viet Nam. Demands for reductions in the use of public funds for education and dramatic increases in the cost of energy further compounds this already critical economic situation.

Contemporary technological growth has been a major influence on the content of vocational education curriculum during the past few decades. Further, an accelerated technological growth pattern in the future is certain. The frequency of the number of innovations, the rate at which these innovations occur, the reduced period of time required for the infusion of these innovations into society as well as the influence which one innovation might have on the creation of a new innovation all contribute to the demands of preparing skilled entry level workers.

The civil liberties of all individuals in every aspect of American life have received profound attention during the last twenty years. A host of Federal Statutes and regulatory measures have been instituted to

insure the educational rights of all persons seeking occupational entry regardless of their racial, sexual, cultural, physical, economic, emotional or intellectual background.

As an integral element of society, vocational education is directly influenced by the forces of economic, technological and social change. Through its dynamic role in society, vocational education has the distinction of also providing direct influence to these very same forces. Thus, a symbiotic relationship is identified which requires a continuous and interrelated growth mode if optimum benefit is to be expected. The collection and processing of data required for decision-making in vocational education is therefore complex as an activity and far reaching in its implications.

Background

Since its establishment in 1955, the New Jersey Vocational-Technical Curriculum Laboratory has been responsible for the planning, development, coordination, field-testing, publication and dissemination of curriculum materials for use at the State and local levels. In 1973, the Northeast Network for Curriculum Coordination, a project funded through the Education Amendments of 1976, was added to the Curriculum Laboratory. Its purposes are to improve the quality of vocational curriculum materials and reduce the duplication of curriculum development efforts through an exchange of information and materials.

An extensive revision of the Curriculum Laboratory was undertaken in 1979. All activities associated with the production, printing and central publication of curriculum materials were eliminated. The revised Curriculum

Laboratory which emerged in 1980 became the organizational holding unit composed of three interrelated projects. Among these were the Northeast Network for Curriculum Coordination Project, the Statewide Dissemination Project/Northeast Network and the Statewide Curriculum Development Project.

The Northeast Network for Curriculum Coordination continues to function as before and provides vocational educators with curriculum materials, information services, newsletters, catalogs and other related publications.

The Statewide Dissemination Project permits the Curriculum Laboratory to continue its service as a State clearinghouse for vocational curriculum materials. Holdings are listed in an annual catalog which are available for purchase on a cost recovery basis. The actual printing of materials are not however done at the Curriculum Laboratory as they were in the past.

The Statewide Curriculum Development Project was initiated during the winter of 1980 as a research and development activity funded by the New Jersey State Department of Education, Division of Vocational Education and Career Preparation. Specific project goals include the identification of vocational education program areas likely to be most important during the next five years, the formulation of a consolidated and cost-effective approach to the development of curriculum materials for targeted vocational education program areas and the design and implementation of a summative evaluation system for products developed. Further, this project serves as a vehicle for graduate level study, intern placement and educational

research through its direct affiliation with the Graduate School of Education, Department of Vocational-Technical Education of Rutgers University.

Project Goals and Developmental Stages

Project goals of the Statewide Curriculum Development Project will be achieved through a sequence of five developmental stages. These include: Stage One, Needs Assessment; Stage Two, Curriculum Development; Stage Three, Field Testing and Formative Evaluation; Stage Four, Dissemination and Utilization; and Stage Five, Summative Evaluation. The remainder of this report will address the completion of the first stage of the project's development, Needs Assessment.

Statement of the Problem and Objectives

The problem investigated during this stage of the project was the formative development of a needs assessment model which would identify vocational education program areas and specific titles with the greatest statewide need. Considerations to be incorporated in this model included an array of selected demographic, educational and decision-making data. The model was to provide for an integrated review of these data in order to target vocational education program areas for additional research and development as outlined in the remaining stages of the project. It was anticipated that this multi-dimensional needs assessment model would reflect the social, economic and technological elements of society which presently impact on the vocational education community.

Specific objectives included the development of: (1) vocational education program areas and specific titles with the greatest statewide need, (2) a weighted set of decision-making factors used in the allocation of vocational education resources, (3) a listing of demographic data for

selected vocational education program areas and specific titles, (4) a descriptive profile of curriculum materials in selected vocational education program areas and specific titles currently in use throughout the state, and (5) a listing of the primary textbooks which are being used in selected vocational education program areas and specific titles throughout the state.

It is anticipated that the needs assessment model could also be applied to municipal, county and regional settings for curricular decision-making. Also, data and findings of this model might also aid the decision-making process for long range policy planning, facility development and space utilization.

Scope and Limitations

This research activity utilized existing demographic data available from various state agencies, computer record files and public documents in New Jersey. Further, representative sampling procedures and rating schedules were utilized to secure additonal data necessary to reach findings.

The findings of this study are therefore limited by: (1) the reliability and validity of the data collected and reported by sources used, (2) the degree in which the samples used are representative of the populations from which they were selected, (3) the validity and reliability of the samples used in relation to the constructs of the study, and (4) the face validity of the instrumentation used in the study.

Further, the findings of the study are limited in their application to a specific point in time around the completion date of the needs assessment and may not be generalizable to geographic settings other than the entire state of New Jersey.

Section II

PROCEDURE

Introduction

The problem investigated during this stage of the project was undertaken in two related parts. Both of these parts contributed to the identification of vocational education program areas and specific titles with the greatest statewide need as well as the formative development of a needs assessment model which could be applied to other vocational education program areas and specific titles in the future. Part one included research activities necessary to develop a weighted set of decision-making factors used in the allocation of vocational education resources and to provide a listing of vocational education program areas and specific titles likely to be most important during the next five years. This section also involved the collection and subsequent application of selected data necessary to calculate demographic importance scores for vocational education program specific titles identified.

The second part was undertaken in order to review curriculum materials in use throughout the state using a set of standards reflecting the generic elements of competency-based vocational education as well as considerations appropriate to meet the special needs student populations. Vocational education program specific titles identified in section one were used in this review. Data collected were used to calculate educational need scores and to provide additional curricular information for these titles.

An Advisory Council was formed as an integral element of the State-wide Curriculum Development Project. This body met prior to the start of each part of the needs assessment stage of the project to discuss the forthcoming research designs and provide suggestions for their successful implementation.

Design of the Study

The following procedural outline lists the sequence followed during both parts of the needs assessment stage of the project:

Part I: Demographic Importance

A. Identification of a survey population.

B. Development of research instrument sections.

   1. Decision-making factors section.

   2. Primary DELPHI section.

C. Meeting of Advisory Council.

D. Revision of survey instrument sections.

E. Collection of survey data.

F. Analysis of survey data.

G. Development of secondary DELPHI survey instrument.

H. Collection of survey data.

I. Analysis of survey data.

J. Development of a conversion matrix for data collected through secondary DELPHI survey.

K. Collection of demographic data.

   1. Community based data.

   2. School based data.

L. Calculation of demographic importance factors.

Part II: Educational Need

A. Identification of a survey population and sampling procedure.

B. Determination of data collection methods.

C. Development of a curriculum rating schedule.

D. Meeting of Advisory Council.

E. Revision of research instrument and test for face validity.

F. Further revision of research instrument.

G. Development of high levels of inter-rater reliability using the curriculum rating schedule.

H. Scheduling of appointments for data collection.

I. Collection data.

J. Analysis of data.

K. Calculation of educational need factors.

L. Development of descriptive curriculum profiles.

M. Development of curricular supplemental information.

The formative development of a needs assessment model was undertaken as a continuous research activity during the conduct of the study. The actual presentation of the model will be incorporated in the findings section of this report.

A brief description of the procedures followed in the demographic importance part and the educational needs part of the design will be provided in the order in which they are listed above.

Demographic Importance

The demographic importance part was undertaken to interface school and community based data with a proportional (weighted) set of decision-

making factors used in the allocation of vocational education resources.

The Population

The population surveyed in the first part of the needs assessment consisted of all the members of the County Career Education Coordinating Councils in New Jersey (N=357) and selected staff members of the New Jersey Department of Education, Division of Vocational Education and Career Preparation (N=27). Although the size of each of the twenty-one County Career Education Coordinating Councils varied, their categorical membership was consistent. New Jersey Statutes require council membership to at least include the county superintendent, the county career education coordinator, the child study team supervisor, the chief school administrator of the county area vocational-technical school when appropriate, a director of a local comprehensive area vocational-technical school, a representative of the county community college when appropriate, a representative of the county superintendent's round table, a representative of the combined local comprehensive high schools offering vocational-technical education, a representative(s) of local business and industry and a representative of the private non-profit schools within the county.

The first research instrument, consisting of a decision-making factors section and a primary DELPHI section, was sent to all of the County Career Education Council Coordinators throughout the state for distribution to council members. A copy of the instrument and distribution memorandum are included in Appendix A. With no follow-up activities there was a return rate of thirty-four percent (N=122).

The second research instrument, consisting of data generated by the primary DELPHI survey, was sent out to 384 persons. It should be noted that due to change in project directors, this survey activity was conducted in two mailings.

County Career Education Coordinating Council members who had responded to the first survey instrument (N=122) were sent secondary DELPHI survey instruments under the direction of the former project director. The remaining and new members of these councils (N=235), and selected staff members of the New Jersey Department of Education, Division of Vocational Education and Career Preparation (N=27) were surveyed under the direction of the new project director. A copy of the survey instrument sent in both of these mailings and the transmittal letter sent in the second part of the mailing are included in Appendix A. No transmittal letter was sent with the first part of the mailing. With no follow-up activities in either of these mailings there was a combined return rate of forty-nine percent (N=188).

The Research Instruments

Two research instruments were specifically designed to aid in the collection of data for this part of the needs assessment. The items of the first questionnaire were designed to provide: (1) a set of weighted values for decision-making factors used in the allocation of vocational education resources, (2) for the identification of any additional decision-making factors, (3) for the identification of vocational education program areas, specific titles and delivery systems likely to be most important during the next five years and (4) the name and address of respondents for secondary DELPHI survey follow-up activities.

This instrument was developed through a review of related literature and edited from comments provided by the Project Advisory Council. Also, the instrument was field-tested using a group of graduate students at Rutgers University.

The secondary DELPHI survey instrument was designed to further delineate vocational education program areas and specific titles likely to be most important during the next five years. A listing of vocational programs which were identified with a frequency rate equal to or greater than one standard deviation above the mean from the primary DELPHI survey were included on this instrument. Programs listed were rated according to their likely need with a five point Likert-type scale. A rating of five denoted a critical need, a rating of one indicated that there was no need. Respondents were to provide a brief rationale for ratings of either five or one in order to reduce response set patterns.

Analysis of Survey Data

Descriptive statistics including means, standard deviations, standard error and variance were computed on all data collected. Computations were done through computer services at Rutgers University using programs from the Statistical Package for the Social Sciences (SPSS).

The eighteen program areas equal to or greater than one standard deviation from the mean were then converted to Office of Education Vocational Education Data Systems (OE/VEDS) program specific titles and code numbers through consultation with staff members of the New Jersey Department of Education, Division of Vocational Education and Career Preparation. This action was necessary in order to align the program titles identified through the open response format used in the primary DELPHI survey with

the OE/VEDS format as well as for the utilization of data from other standardized occupational data systems. A copy of the conversion matrix developed is included in Table 1.

Demographic Data

Demographic data were collected for the vocational education program specific titles listed in the OE/VEDS conversion matrix in each category of decision-making factors used in the allocation of vocational education resources.

Job Market Demand data (JMD) were taken from listings included in the New Jersey State Plan for Vocational Education. Typical Job Earnings (WAGE) were computed by taking the mathematical averages of weekly wages reported by the northern and southern New Jersey Offices of the Bureau of Labor Statistics, U.S. Department of Labor. Both of these decision-making factor categories were classified community based.

The five remaining decision-making factor categories: Enrollment (ENROLL), Placement Figures (PLACE), No. of Disadvantaged Enrolled (DIS), No. of Handicapped Enrolled (HAND), and No. of limited English-Proficient Enrolled (LIM-ENG), were classified school based. Data for these categories were collected from listings included in a computer print-out supplied by the New Jersey Department of Education, Division of Vocational Education and Career Preparation. Placement figures were not available.

Calculation of Demographic Importance

Demographic Importance Scores were calculated for the vocational education program specific titles listed in the OE/VEDS conversion matrix using the following procedure:

TABLE 1

CONVERSION MATRIX: OCCUPATIONAL TITLES IDENTIFIED THROUGH SECOND STAGE OF DELPHI SURVEY - OE/VEDS TITLES

SECONDARY LEVEL

Delphi Generated Occupational Titles & Program Areas	OE/VEDS Program Specific Titles	OE/VEDS Code No.
Business Education		
1. Business Data Processing	1.1 Computer & Console Op.	14.0201
	1.2 Programmers	14.0203
	1.3 Business Data Proc, Other	14.0299
2. Secretarial	2.1 Steno, Secy & Related	14.0700
	2.2 Typing & Related Occ.	14.0900
3. Office/Clerical	3.1 Filing, Off. Mach. & Gen. Off.	14.0300
Vocational Industrial Education		
1. Auto Mechanics	1.1 Auto Mechanics	17.0302
2. Diesel Mechanics	2.1 Diesel Mechanics	17.1200
3. Electronics	3.1 Electronics Occ.	17.1500
4. Solar Energy	4.1 Plumb. & Pipe.	17.1007
	4.2 Electrical Occ.	17.1400
	4.3 Stationary Eng.Sources Occ.	17.3200
5. Computer Technology	5.1 Sci. Data Proc.	16.0117
Health Occupations Education		
1. Health Occupations & Medical Technology	1.1 Dental Assistant	07.0101
	1.2 Nursing Assistant (Aid)	07.0303
	1.3 Medical Assistant	07.0904
	1.4 Other Health Occ. Ed.	07.9900

POST SECONDARY LEVEL

Business Education		
1. Business Data Processing	1.1 Computer & Console Op.	14.0201
	1.2 Programmers	14.0203
	1.3 Business Data Proc, Other	14.0299
2. Secretarial	2.1 Stenographic, Secretarial	14.0700
	2.2 Typing & Related Occ.	14.0900
Vocational Industrial Education		
1. Auto Mechanics	1.1 Auto Mechanics	17.0302
2. Diesel Mechanics	2.1 Diesel Mechanic	17.1200
3. Electronic Repair	3.1 Electronics Occ.	17.1500
4. Solar Energy	4.1 Plumb. & Pipe.	17.1007
	4.2 Electrical Occ.	17.1400
	4.3 Stationary Eng. Sources Occ.	17.3200
5. Computer Technology	5.1 Scientific Data Proc.	16.0117
Health Occupations Education		
1. Nursing (RN)	1.1 Nursing (Assoc. Degree) RN	07.0301
2. Health Occupations & Medical Technology	2.1 Practical (Voc) Nursing	07.0302
	2.2 Dental Assistant	07.0101
	2.3 Dental Laboratory Asst.	07.0103
	2.4 Medical Assistant	07.0904

1. Identify decision-making factors and determine their weighted values.*

   $(W_1, W_2, W_3, W_4, W_5, W_6, W_7)$*

2. Collect raw community and school based demographic data for each program specific title.

3. Normalize the demographic data within each vocational education program area by dividing the largest number into the remaining numbers in each decision-making factor category. The resulting normalized data will have a range from 1.00 to 0.00.

   $(A_1, A_2, A_3, A_4, A_5, A_6, A_7)$

4. Calculate the Demographic Importance Scores (DIS) for each program specific title by multiplying the normalized data by the weighted value and summing across.

   $DIS = (W_1 A_1) + (W_2 A_2) + (W_3 A_3) + (W_4 A_4) + (W_5 A_5) + (W_6 A_6) + (W_7 A_7)$

*Decision-Making factor weights that were determined in this study:

$W_1 = 28.85$ (Job Market Demand)

$W_2 = 20.81$ (Enrollment)

$W_3 = 17.59$ (Placement Figures)

$W_4 = 10.71$ (Typical Job Earnings)

$W_5 = 8.65$ (No. of Disadvantaged Enrolled)

$W_6 = 8.63$ (No. of Handicapped Enrolled)

$W_7 = 4.82$ (No. of English-Proficient Enrolled)

Educational Need

The second part of this research activity was undertaken in order to compute educational need factor scores for vocational education program specific titles identified in the demographic importance part of the study. Indices computed in both parts of this study were combined to identify vocational education program specific titles with the greatest statewide need in the program areas reviewed.

The Population

The population used in the educational need part of this study consisted of all the area vocational technical schools (AVTS) and comprehensive high schools with vocational education offerings in New Jersey. A stratified randomly selected sample of five institutions from each of the four Educational Improvement Centers (EIC) geographic regions was selected. One AVTS and four comprehensive high schools were selected in each EIC region. Due to the limited availability of one vocational education program specific title, a technical institute was also included in the sample (Total N=21).

Letters requesting site visitations for data collection were sent to all institutions in the sample. Four area vocational technical schools and one comprehensive high school declined to participate in this activity. Randomly selected alternates were chosen to fill sample categories needed. A listing of program titles reviewed is included in Table 2.

The Research Instrument

A one page curriculum rating schedule was specifically designed to aid the collection of data in this part of the study. The fifteen items

TABLE 2

LISTING OF VOCATIONAL PROGRAM TITLES REVIEWED

Program Area and Title	VEDS Number	Level of Delivery	
		Secondary*	Post Secondary**
Business Education			
Computer & Console Operators	14.0201	X	X
Programmers	14.0203	X	X
Business Data Processing Other	14.0299	X	X
Stenographic, Secretarial & Related	14.0700	X	X
Typing & Related Occupations	14.0900	X	X
Filing, Office Machines & General Office	14.0300	X	-
Health Occupations			
Dental Assistant	07.0101	X	X
Dental Laboratory Assistant	07.0103	-	X
Nursing Assistant (Aid)	07.0303	X	-
Medical Assistant	07.0904	X	X
Practical (Vocational) Nursing LPN	07.0302	-	X
Other Health Occupations Ed	07.9900	X	-
Vocational Industrial Education			
Auto Mechanics	17.0302	X	X
Diesel Mechanics	17.1200	X	X
Electronics Occupations	17.1500	X	X
Scientific Data Processing	16.0117	X	X
Solar Energy Cluster:			
1. Plumbing & Pipefitting	17.1007	X	X
2. Electrical Occupations	17.1400	X	X
3. Stationary Energy Sources Occ.	17.3200	X	X

*Secondary includes programs offered at the 11th and 12th grade levels.

**Post-Secondary includes short and long term Vocational-Technical Adult Education programs.

included on this rating schedule represented the generic elements of competency-based vocational education as well as curricular considerations appropriate to meet the special needs of students. Also collected were: (1) the origin of the curriculum, the date of origin and the date of revision, (2) the title, author and copyright date of the primary textbooks, (3) coding information necessary for computer analysis and (4) rater comments.

A modified version of a Likert scale format was used to rate the percentage of each characteristic present in the curriculum materials reviewed. Most measurement situations utilize the Likert format to assess opinions through the assignment of ordinal or interval scales to descriptive statements. The measurement needs of curriculum rating schedule, however, required the assignment of an interval scale to a ratio scale rather than the more commonly used descriptive statement assignment. The ratio scale in this case was a percentage range with four sub-groups equivalent to a normal distribution. The measurement system used in the instrument included the following proportional values:

1 = 0 to 20% - presence of the characteristic

2 = 21 to 50% - presence of the characteristic

3 = 51 to 80% - presence of the characteristic

4 = 81 to 100% - presence of the characteristic

The curriculum rating schedule was developed through a review of related literature and edited from comments provided by members of the Project Advisory Council and selected faculty members from the University of Vermont and Florida International University.

The instrument was field-tested by members of the rating team prior to actual data collection in a controlled setting using curriculum from the New Jersey Vocational-Technical Curriculum Laboratory. This activity also served to provide rater training and to develop a high level of inter-rater reliability (estimated R=.85).

A copy of the curriculum rating schedule used to collect data during site visitations is included in Appendix A.

Data Collection and Analysis

Data were collected through scheduled research team visits to AVTS's and comprehensive high schools in the sample. Research team size varied between two and four members depending upon the schedules of individuals collecting data.

Descriptive statistics including means, standard deviations, standard error, variance and coefficients of correlation were computed on all data collected. Computations were done through computer services at Rutgers University using programs from the Statistical Package for the Social Sciences (SPSS).

Calculation of Educational Need

Educational Need Scores were calculated for the vocational education program specific titles identified in the demographic importance part of this study using the following procedure:

1. Collect raw data in each of the fifteen curriculum characteristic areas included on the research instrument.
2. Determine the mean rating of each curriculum characteristic area for program specific titles reviewed.

3. Calculate the Educational Need Score by subtracting the combined mean rating of each curriculum characteristic within a program area from the perfect value rating used in the instrument (4.0).

Utilization of Empirical Findings

An important consideration which directly affected the successful application of the data collected and findings reached as a result of the demographic importance and educational need parts of the model was the manner in which it might be used. Following a review of the literature on the utility of needs assessment model, two choices were identified for consideration: (1) the data and findings of the model can be applied directly to decision-making per se or (2) the data and findings can be reviewed and synthesized with other information and considerations to serve as an aid to decision-making.

It was decided that the ultimate utility of the findings and design of the model would be strengthened if the decision-assisting approach rather than the decision-making approach were incorporated. It was recognized that the decision-assisting approach has two major advantages over the decision-making approach. First, it provides the flexibility necessary to introduce important considerations which were not possible to include in a quantifiable manner. Secondly, it provides an opportunity to introduce timely information that was unavailable or unknown earlier. Further, the decision-assisting approach has been compared to a fail-safe concept which can be used to insure the achievement of previously identified goals.

In order to incorporate the decision-assisting approach as an integral element of the needs assessment model, a preliminary report was developed. This document provided a comprehensive description of the background of the study, procedures followed, as well as the findings in the form of

calculated statewide need, which upon distribution permitted an executive level decision-assisting activity.

Dissemination Activities

Statewide dissemination of the findings of this project were achieved through the Occupational Resource Center of the Educational Improvement Center - Central, presentations given at the NJEA Convention, the VEANJ Convention, occasional meeting of the various County Career Education Coordinating Councils, staff meetings of the Division of Vocational Education and Career Preparation and to graduate student classes, offered through the Department of Vocational-Technical Education, Rutgers University.

Regional and National dissemination of the findings of this project were achieved through presentations to the National Conference on Technical Education and at a meeting of the Northeast Region of the National Network for Curriculum Coordination.

Reduction of Sex Role Stereotyping

Specific action was undertaken in the development of the curriculum rating schedule to include the reduction of sex role stereotyping as a criterion to be used in the evaluation of curriculum materials reviewed during site visitations. Further, the data collected as a result of the application of this instrument was presented in a comparative manner with other curriculum characteristics in Charts 1-3 and became an integral element of the findings as well as the recommendations of this study. A copy of the curriculum rating schedule is included in Appendix A.

Section III

FINDINGS

Introduction

The findings of this study are reported in a sequence reflecting the order in which they occurred during this research activity. The report on part one contains a set of weighted decision-making factors used in the allocation of vocational education resources. Also reported in this section are: (1) the results of a two stage DELPHI survey undertaken to identify vocational education program areas and specific titles likely to be most important during the next five years, (2) selected demographic data, and (3) the Demographic Importance Scores which were calculated from data collected.

The report on the second part includes findings identified through data collection using the curriculum rating schedule during site visitations. Also reported are: (1) the calculated Educational Needs Scores, (2) curriculum profiles for vocational education program specific titles reviewed, and (3) related ad hoc findings.

The next segment of this section will report on the identification of vocational education program specific titles with the greatest statewide need as calculated through the application of data collected from all parts of this investigation. Also to be reported are the generic elements of the curriculum needs assessment model which was formatively developed during this research activity.

Part I: Demographic Importance

The weighted set of decision-making factors used in the allocation of vocational education resources as found through a survey of County Career Education Coordinating Council members (N=122) is included in Table 3.

TABLE 3
DECISION-MAKING
IMPORTANCE FACTOR WEIGHTS (IFW) IDENTIFIED THROUGH FIRST STAGE
OF DELPHI SURVEY (N=122)

Decision-Making Importance Factors	Mean (Weights)	S.D.	S.E.
Job Market Demand (JMD)	28.85	12.99	1.25
Enrollment (ENROLL)	20.81	16.38	1.58
Placement Figures (PLACE)	17.59	11.09	1.07
Typical Job Earnings (WAGE)	10.71	9.25	0.89
No. of Disadvantaged Enrolled (DIS)	8.65	8.25	0.79
No. of Handicapped Enrolled (HAND)	8.63	8.08	0.78
No. of Limited English-Proficient Enrolled (LIM-ENG)	4.82	4.80	0.46

The primary DELPHI survey, an integral element of the decision-making factors survey, identified 65 vocational education program specific titles and program areas likely to be most important during the next five years. When combined with educational delivery levels indicated by respondents, this number was expanded to 103. The vocational education

programs which were identified with a frequency rate equal to or greater than one standard deviation above the mean by County Career Education Coordinating Council members (N=122), are included in the secondary DELPHI survey instrument. A copy of this instrument is included in Appendix A.

The findings of the secondary DELPHI survey as well as the demographic data collected in the decision categories identified earlier are included in Tables 6-11 in Appendix B. It should be noted that the data included in these tables are in raw as well as in normalized form. Further, it should be noted that the Demographic Importance Scores and Demographic Factor Rank lists are not products of the final computations to identify vocational education program specific titles with the greatest statewide need. The Demographic Importance Scores were, however, applied in later computations to identify the program specific titles with the greatest statewide need.

Part II: Educational Need

The means of ratings given to curriculum materials in use are included in Table 4 and Charts 1-3. The dashed bar chart elements represent the combined mean ratings of curriculum materials reviewed in all program specific titles (Total number of ratings = 209). The solid bar chart elements represent the mean ratings of curriculum materials reviewed in a particular vocational education program area and level. The number of program specific titles per program area and level varied between four and seven. The number of ratings for any particular program-specific title varied according to the availability of that title to raters and the number of raters on site visitations.

TABLE 4

RATINGS OF CURRICULAR CHARACTERISTICS

CURRICULAR CHARACTERISTICS	MEAN RATINGS			
	Business Education (N=103)	Health Occupation Education (N=37)	Vocational Industrial Education (N=69)	Combined (N=209)
1. Objectives	2.82	3.08	2.64	2.78
2. Performance Evaluation	3.01	3.19	2.62	2.90
3. Content Validity	3.17	3.51	2.80	3.11
4. Sex Bias	3.54	3.16	3.35	3.41
5. Management Information	2.84	2.97	2.48	2.75
6. Individualization	2.68	2.35	2.03	2.38
7. Progression of Skill Development	2.98	2.70	2.26	2.69
8. IEP Records	2.10	2.62	1.91	2.13
9. Formative Evaluation	1.73	2.24	1.57	1.77
10. Prerequisite Skill Levels	1.77	2.05	1.51	1.73
11. Prescriptive Teaching	1.95	2.16	1.51	1.84
12. Normal Populations	3.93	3.97	3.88	3.92
13. Handicapped Populations	1.09	1.62	1.13	1.20
14. Disadvantaged Populations	1.05	1.54	1.13	1.16
15. Gifted Populations	1.02	1.35	1.03	1.08

CHART 1
DESCRIPTIVE PROFILE FOR BUSINESS EDUCATION
CURRICULUM MATERIALS REVIEWED

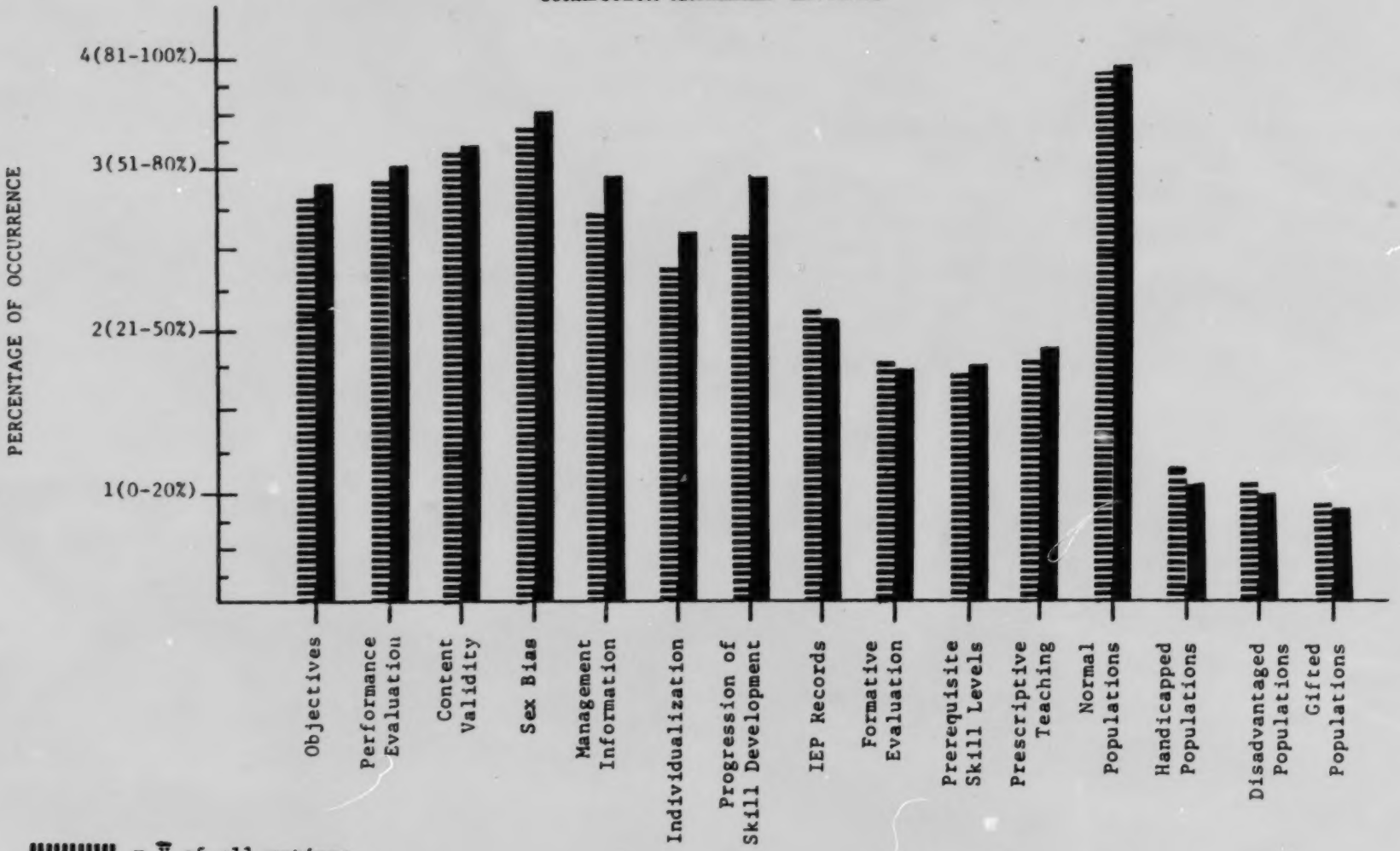


CHART 2
DESCRIPTIVE PROFILE FOR HEALTH OCCUPATIONS
EDUCATION CURRICULUM MATERIALS REVIEWED

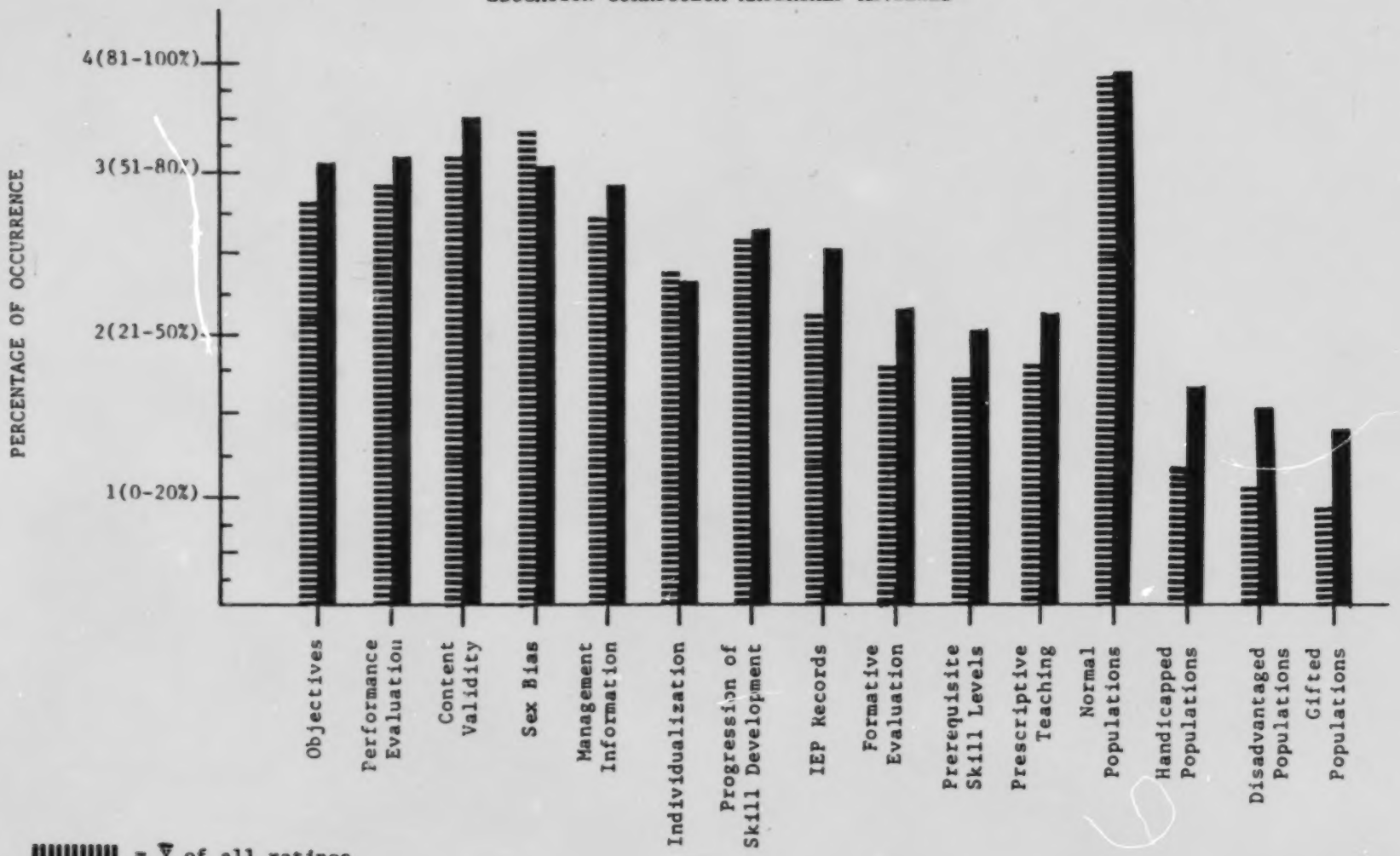
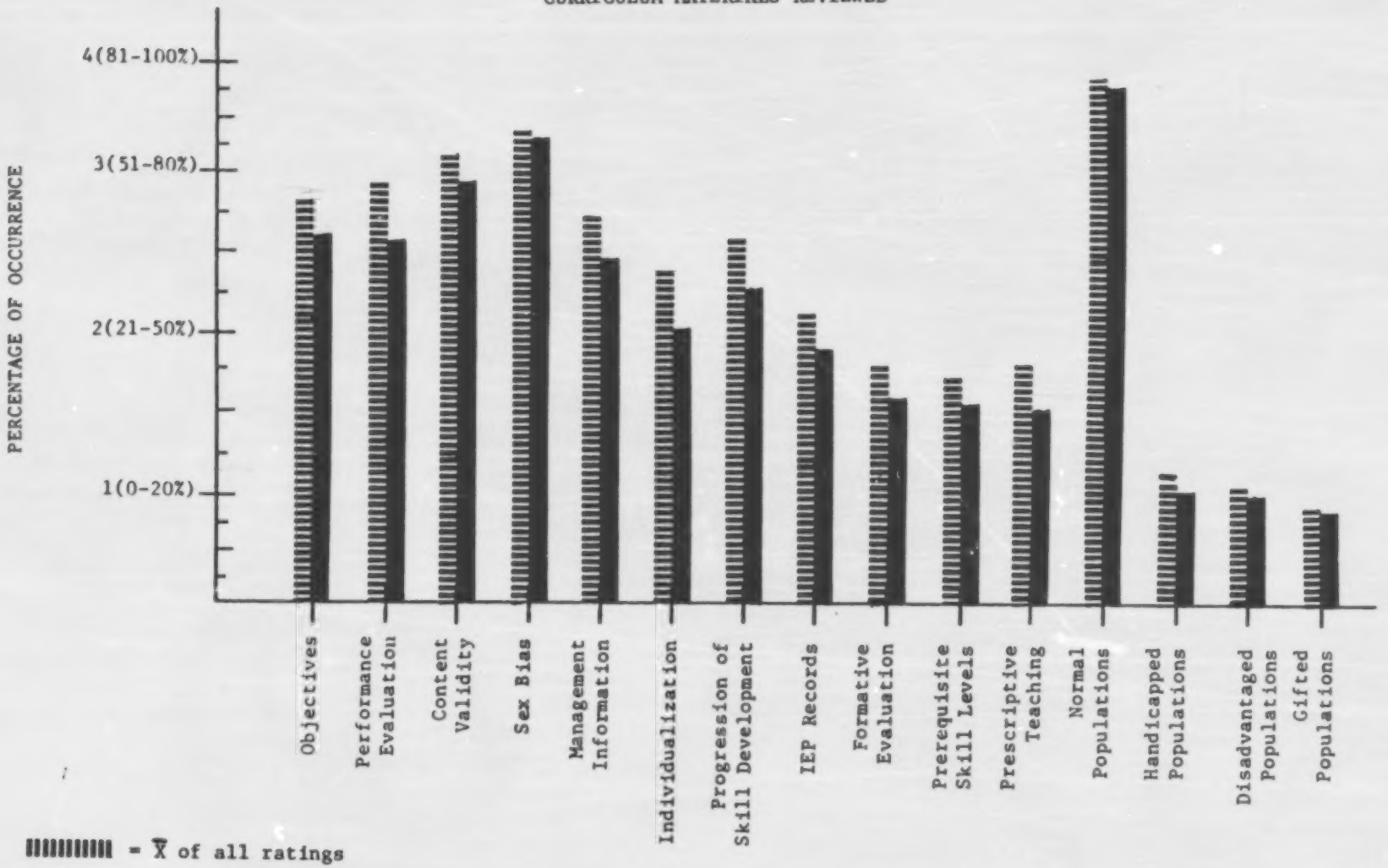


CHART 3
DESCRIPTIVE PROFILE FOR VOCATIONAL-INDUSTRIAL
CURRICULUM MATERIALS REVIEWED



Greatest Calculated Statewide Need

The vocational education program specific titles with the greatest calculated statewide need are listed in Table 5. Separate rank order listings are included for programs delivered at the secondary and post-secondary levels. These rank order listings were developed as a result of multiplying the Demographic Importance Scores and Educational Need Scores reported on earlier in this section. The data used to calculate these findings are listed in greater detail in Tables 12-17 in Appendix B.

Curriculum Needs Assessment Model

The curriculum needs assessment model which was formatively developed through this research activity consisted of five inter-related sections: (1) the decision-making factors section, (2) the program specific title section, (3) the demographic importance section, (4) the educational need section, and (5) the executive level decision-assisting section. Data from the first four sections were interfaced to identify vocational education program specific titles with the greatest calculated statewide need. This information presented in the form of a preliminary report provided for the achievement of the fifth and final section of the model.

The decision-making factor section was used to identify and assign proportional values (weights) to considerations associated with the allocation of resources in vocational education. Among these were considerations related to trends influenced by current legislation at the State and Federal level, indicators of already committed capital outlay and/or human resources, indicators of student interest, as well as indicators of employment likelihood and income levels.

TABLE 5
RANK ORDER LISTING OF VOCATIONAL EDUCATION PROGRAM SPECIFIC TITLES
WITH HIGHEST CALCULATED STATEWIDE NEED

Program Area and Title	Rank Order by Level of Delivery: Secondary	Rank Order by Level of Delivery: Post Secondary
Business Education		
Stenographic, Secretarial & Related	1	1
Filing, Office Machines & General Office	2	*
Typing & Related Occupations	3	3
Business Data Processing Other	4	2
Programmers	5	4
Computer & Console Operators	6	5
Health Occupations		
Nurse Assistant (Aid)	1	*
Dental Assistant	2	2
Other Health Occupation Education	3	*
Medical Assistant	4	3
Practical (Vocational) Nursing LPN	**	1
Dental Laboratory Assistant	**	4
Vocational Industrial Education		
Auto Mechanics	1	1
Diesel Mechanics	2	4
Solar Cluster***	3	3
Electronics	4	5
Scientific Data Processing	5	2

*Program specific title not available at the post-secondary level.
**Program specific title not available at the secondary level.
***It should be noted that the rank order for this title was determined through a mean ($\bar{X}$) of data collected in program specific titles frequently associated with solar energy utilization. This included plumbing and pipefitting, electrical occupations and stationary energy sources.

The program specific title section included two DELPHI surveys used to identify vocational education program titles with the greatest projected importance during the next few years. The titles most frequently identified in the first DELPHI survey became the content area for the second DELPHI survey instrument.

The demographic importance section consisted of a mathematical procedure of interfacing the decision-making weights with representative community and school based demographic data for vocational education program specific titles within a single program area in order to calculate demographic importance scores.

The educational need section involved reviewing existing curriculum materials in use throughout the State using a set of standards reflecting the generic elements of competency based education and educational considerations of special student populations. Ratings collected from this review when subtracted from the highest possible rating value became educational need scores.

The vocational education program specific titles with the greatest calculated statewide need were identified from rank order listings of the products obtained from multiplying the educational need scores by the demographic importance scores.

The procedures followed and the finding of the first four stages of the needs assessment were stated in a preliminary report in order to facilitate entry into the last stage of the model. Following this, an executive level decision-assisting review activity was undertaken. As a result, the program titles of dental assistant, business data processing

other, computer & console operators and other health occupations education were identified for curriculum development.

Following discussion with staff members of the New Jersey State Department of Education, Division of Vocational Education and Career Preparation, two of these titles were further defined. Information processing was introduced as a title to combine business data processing and computer console operators. Health occupations careers was introduced to further define other health occupations education. Dental assisting remained the same.

Ad Hoc Findings

The ad hoc findings reported by members of the research team during curriculum rating visits are divided into two categories: (1) those observations based on consensus among team members and supported by empirical data and (2) those observations based primarily on consensus among team members.

The following observations are of the first category:

1. Most schools visited indicated a willingness to participate as field test centers for curriculum materials produced during the project's second stage.
2. All of the schools visited had courses of study on file. Many of them, however, had not been updated or revised during the last three years.
3. There was evidence of very limited use of materials produced or distributed by the N.J. Vocational-Technical Curriculum Lab.
4. Curriculum materials in the health occupations education and the vocational-industrial education program areas were almost exclusively the products of individual teachers.

5. Curriculum materials in the business education program areas were almost exclusively the products of commercial publishers.

The following observations are of the second category:

1. There appeared to be little use of local advisory councils by classroom teachers in most schools visited.
2. Those curriculum materials which were considered of the highest quality by raters seemed to be due to the individual efforts of a single teacher. Vast ranges in the quality and format of curriculum materials observed within and among schools visited.

Additional ad hoc findings relating to the textbooks and origin of curriculum materials reviewed during site visitations to vocational schools were also identified. By program area, the mean copyright date of textbooks was: business education, 1974.24; health occupations education, 1974.71; and vocational industrial education 1971.36. A complete listing of the textbook titles, copyright dates and origin of curriculum material reviewed is listed in Tables 18-20 in Appendix C.

Section IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The Statewide Curriculum Development Project was undertaken as a research and development activity funded by the New Jersey State Department of Education, Division of Vocational Education and Career Preparation. Overall project goals include the identification of vocational education program areas likely to be most important during the next five years, the formulation of a consolidated and cost-effective approach to the development of curriculum materials for targeted vocational education program areas and the design and implementation of a summative evaluation system for products developed.

Project goals will be achieved through a sequence of five developmental stages. These include: Stage One, Needs Assessment; Stage Two, Curriculum Development; Stage Three, Field Testing and Formative Evaluation; Stage Four, Dissemination and Utilization; and Stage Five, Summative Evaluation. The presentation of this report marks the completion of the project's first stage: Needs Assessment.

The problem investigated during this stage of the project was the formative development of a multi-dimensional curriculum needs assessment model to identify vocational education program specific titles with the greatest statewide need. The achievement of this knowledge was intended to aid executive decision-making at the State level so that selected program specific titles could be identified for curriculum development during the project's second stage.

The curriculum needs assessment model which was developed consisted of five sections: (1) the decision-making factors section, (2) the program specific title section, (3) the demographic importance section, (4) the educational need section and (5) an executive level decision-assisting section. A population consisting of County Career Education Coordinating Council members was surveyed to collect data for the first two sections.

The decision-making factors associated with the allocation of vocational education resources and their proportional weights assigned as identified through the first survey activity included: job market demand (weight = 28.85), enrollment (weight = 20.81), placement figures (weight = 17.59), typical job earnings (weight = 10.71), the number of disadvantaged students enrolled (weight = 8.65), the number of handicapped students enrolled (weight = 8.63), and the number of limited English-proficient students enrolled (weight = 4.82). With no follow-up, these findings were based on a thirty-four percent return rate (N = 122). Also collected through this first survey activity were the initial set of data for the program specific title section.

Two DELPHI surveys were utilized to collect data in the program specific title section. The first DELPHI survey employed an open ended response format to identify 103 vocational education programs and specific titles likely to be important during the next five years. The content of the second DELPHI survey instrument included the highest program specific titles identified through the first survey. Seventeen program specific titles distributed among the program areas of business education, health occupation education and vocational

industrial education were identified. With no follow-up, these findings were based on a return rate of forty-nine percent (N=188).

Selected community and school based data were collected to initiate entry into the demographic importance section. These raw data were normalized and chain multiplied with the decision-making factor weights in order to calculate demographic importance scores. These scores were later utilized at the conclusion of the next section.

The educational need section involved reviewing existing curriculum materials in use throughout the State using a rating schedule consisting of fifteen characteristics reflecting the generic elements of competency based education and considerations appropriate to special student populations. Ratings collected through research team visits to twenty-one area vocational-technical schools and comprehensive high schools were subtracted from the highest possible rating value (4.0) to determine educational need scores.

The vocational education program specific titles with the greatest calculated statewide need were identified from rank order listings of the products obtained from multiplying the educational need scores by the demographic importance scores. These are included in the listing on the next page.

A set of descriptive profiles for curriculum materials reviewed in the areas of business education, health occupations education, and vocational industrial education were also developed. The curricular characteristics which exhibited the highest overall presence included: field testing with normal populations ($\bar{X}$=3.92), reduced sex biasing

($\bar{X}$=3.41), the degree of content validity ($\bar{X}$=3.11), and the existence of performance evaluation measures ($\bar{X}$=2.90). The characteristics with the lowest overall presence included: the existence of prescriptive teaching methods ($\bar{X}$=1.84), the identification of prerequisite skill levels ($\bar{X}$=1.73), and field testing with special populations (combined $\bar{X}$=1.15).

Program Areas and Specific Titles with Highest Calculated Statewide Need

Program Area and Title	Secondary	Post Secondary
Business Education		
Stenographic, Secretarial & Related	1	1
Filing, Office Machines & General Office	2	-
Typing & Related Occupations	3	3
Business Data Processing Other	4	2
Programmers	5	4
Computer & Console Operators	6	5
Health Occupations		
Nurse Assistant (Aid)	1	-
Dental Assistant	2	2
Other Health Occupation Education	3	-
Medical Assistant	4	3
Practical (Vocational) Nursing LPN	-	1
Dental Laboratory Assistant	-	4
Vocational Industrial Education		
Auto Mechanics	1	1
Diesel Mechanics	2	4
Solar Cluster	3	3
Electronics	4	5
Scientific Data Processing	5	2

In order to incorporate the decision-assisting approach as an integral element of the needs assessment model, a preliminary report was developed. This document provided a comprehensive description of the background of the study, procedures followed, as well as the findings in the form of calculated statewide need, which upon distribution permitted an executive level

decision-assisting activity. This action served to introduce the fifth and final stage of the statewide needs assessment model.

A distinction should be noted between the decision-assisting approach chosen for the final stage of the model and the more common decision-making activity associated with data application. Data and findings of a research activity can be applied directly to decision-making per se or they can be reviewed and synthesized with other information and considerations as an aid to decision-making. The decision-assisting approach was chosen over the decision-making approach for utilization in the model for two primary reasons. First, it provides the flexibility necessary to introduce important considerations which were not possible to include in a quantifiable manner. Secondly, it provides an opportunity to introduce timely information that was unavailable or unknown earlier. Further, the decision-assisting approach has been compared to a fail-safe concept which can be used to insure the achievement of previously identified goals.

CONCLUSION

A statewide curriculum needs assessment model compatible with the data collection systems in New Jersey was formatively developed as a product of this research activity. Further, as a result of an executive level review of data collected through this model, three curriculum development projects were identified for future action. Among these were projects in the areas of dental assisting, exploratory health occupations as well as a resource guide which will review existing word and data processing curriculum materials. Concurrent to the development of these products will be the continued application of the statewide curriculum needs assessment model to vocational education program areas not yet reviewed.

The statewide curriculum needs assessment model developed was significant in that it provided a systemic approach to the consideration of a host of variables affecting curricular decisions in vocational education. A distinguishing feature of this model is its ability to react to all program areas of vocational education in an equal fashion. Further, the overall findings of this model can also be applied to long range policy planning, facility development and space utilization. Specific components of the model such as the curriculum rating schedule, curriculum profile charts and such will provide an aid to further independent application by persons involved in curriculum review, validation and/or development.

Recommendations

The following recommendations have been based on the findings and conclusions of this research activity:

1. That the findings of this and future sections of the Statewide Curriculum Development Project become working documents for curriculum planning, space utilization and program development.
2. That the five stage curriculum needs assessment model developed and data collected be utilized as an aid to curriculum development, revision and validation activities in New Jersey.
3. That future exploration be undertaken to develop a close working relationship between the component projects of the N.J. Vocational-Technical Curriculum Laboratory.
4. That additional needs assessment activities for vocational education program areas not yet addressed be undertaken concurrently to curriculum development during the later portion of the project's second stage.

5. That all future needs assessment activities utilize survey instrumentation which is compatible with State and Federal data collection systems.
6. That all future needs assessment activities utilize samples from populations directly representative of constructs being measured. This would include education administrators for decision-making constructs and content specialists for program specific constructs.
7. That student placement data, which was not available when this study was conducted, be introduced to future application of the needs assessment model if and when it becomes available.
8. That curriculum development efforts undertaken in future project stages take action to maximize the achievement of the following characteristics:
    a. The materials contain objectives which include conditions, performances and criteria.
    b. The materials contain a system for evaluating students' performances, including tests and/or performance checklist that directly measure mastery of the objectives.
    c. The content covered in the materials is current and includes all the necessary knowledge, skills and attitudes.
    d. The materials are free of sex bias.
    e. The materials are accompanied by adequate instructor management information such as record-keeping forms, course sequencing, and directions for implementation.

f. The materials are structured well enough and provide enough student directions to facilitate open-entry/open-exit, self-pacing and individualization.

g. The materials are organized to permit a progression of employable skill development throughout the entire program.

h. The materials are designed to facilitate integral record-keeping in relation to the Individualized Educational Program (IEP).

i. The materials contain a system for continuous formative evaluation that facilitates communication with the I.E.P. Team.

j. The materials contain prerequisite levels of cognitive psychomotor, affective and perceptual skills necessary for successful entry into each instructional unit.

k. The materials provide for prescriptive teaching techniques, alternative instructional materials, and individualized student learning activities that lend themselves to disparate learning styles.

l. The materials be developed with consideration to normal, handicapped, disadvantaged and gifted populations.

APPENDIX A

CORRESPONDENCE AND INSTRUMENTATION

RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY

GRADUATE SCHOOL OF EDUCATION • DEPARTMENT OF VOCATIONAL-TECHNICAL EDUCATION
CURRICULUM LABORATORY • BUILDING 4103 • KILMER CAMPUS • NEW BRUNSWICK • NEW JERSEY 08903 • 201 932 3845 3847

TO: County Career Education Coordinators

FROM: Philip L. Edgecomb, Director (Acting)

DATE: May 5, 1980

SUBJECT: Curriculum Needs Assessment Study

In accordance with the decision reached at your March 28 meeting, I am enclosing twenty copies of the survey instrument and stamped, self-addressed envelopes for each of your counties. Please distribute these to your committee members for their completion. Should you not have enough copies, please give me a call and I will see to it that you get more copies. Note that the committee members will be returning the completed copies directly to me; thus, there will be no need for you to be involved in the process beyond the distribution phase.

Since I was not certain from our meeting with you that your committee has representatives from the private schools and vocational rehabilitation agencies, and since we feel that these people can give us valuable input, could you identify such people from your county and ask them to complete and return a questionnaire?

With respect to the return of the questionnaire, I would like you to encourage your committee people to return the completed surveys by May 23. If this is not a reasonable request, let me know.

Again, let me express my thanks and appreciation for your willingness to cooperate with this important needs assessment. Please extend this appreciation to your committee people.

The New Jersey Vocational-Technical Curriculum Laboratory
A Service of the Division of Vocational Education – New Jersey Department of Education

RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY

GRADUATE SCHOOL OF EDUCATION • DEPARTMENT OF VOCATIONAL-TECHNICAL EDUCATION
CURRICULUM LABORATORIES • BUILDING 4103 • KILMER CAMPUS • NEW BRUNSWICK • NEW JERSEY 08903 (201) 932-3845/46/47

Dear Sir or Madam:

Superior vocational and technical education programs require good planning. Your help is needed in identifying those vocational and technical programs that have potential for being the most important in the next five years. This information will be used to determine priorites for curriculum development in New Jersey.

The study is being funded by the Division of Vocational Education and Career Preparation, New Jersey Department of Education, in cooperation with the Department of Vocational-Technical Education, Graduate School of Education, Rutgers University.

Sincerely yours,

Philip L. Edgecomb

Philip L. Edgecomb, Director (Acting)

Research Assistants
Otto Behrens
Thurman Hux
Cynthia Roszel

1. Read the list of weighing factors. While doing so, think about how important each factor should be in setting priorites for the allocation of resources in the support of vocational education programs.
2. Points should be distributed to indicate the relative importance of the factors:

Example: If you give 60 points to "typical earnings of employees placed" and 20 points to "number of job openings that currently exist", this means that you think "typical earnings" should be three times as important as "number of job openings". If a factor is of no importance to this decision, or is covered within another factor, give it zero.

FACTOR	WEIGHT
Number of students currently enrolled in the program	
Placement statistics	
Number of job openings that presently exist - job market demand	
Typical earnings of employees placed	
Number of handicapped enrolled	
Number of disadvantaged enrolled	
Number of limited English proficient enrolled	
TOTAL POINTS	**100**

If information could be obtained, what additional factors would you add?

_____

_____

_____

_____

Your help is needed in identifying those vocational programs that have potential for being the most important in the next five years.

1. List the five (5) programs you feel will be important. These programs may be new and emerging (i.e., solar energy, emergency medical technician, etc.), or established (i.e., auto mechanics, bookkeeping, child care, horticulture, etc.).
2. Recognizing that some programs are more appropriate at the secondary level (nurse's aid), while other programs are more appropriate at the post-secondary level (registered nurse), please check the block or blocks (2) to indicate which delivery system(s) will be the most important.

(1) (2)

VOCATIONAL PROGRAMS	Special Needs	Secondary Delivery System	Post-Secondary Delivery System
Example: Home Health Care Worker			✓

We will send you the results of this survey in about one month and ask that you take another look at your answers. For this reason,please fill out the following:

Respondent's name: _____ Title: _____

Business Address: _____

Business Telephone: _____

County represented: _____

RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY

GRADUATE SCHOOL OF EDUCATION • DEPARTMENT OF VOCATIONAL-TECHNICAL EDUCATION
CURRICULUM LABORATORY • BUILDING 4103 • KILMER CAMPUS • NEW BRUNSWICK • NEW JERSEY 08903 (201) 932-3946/48/49

August 1, 1980

Dear Career Education Coordinating Council Member,

Would you please take approximately twenty minutes from your busy schedule to assist us in the second part of our curriculum needs assessment? This is one of several components included in the Statewide Curriculum Redirection Project sponsored by the Division of Vocational Education and Career Preparation, New Jersey Department of Education, in cooperation with the Department of Vocational-Technical Education, the Graduate School of Education, Rutgers University.

The enclosed questionnaire has been developed to help further delineate vocational education program areas likely to be most important during the next five years. The data collected will identify the top program areas and provide supporting rationale for their placement.

Please complete the enclosed questionnaire. A postage paid return envelope has been included for your convenience. Send completed questionnaires by August 28, 1980.

Your participation is greatly appreciated. If I can be of any assistance to you regarding this matter, please do not hesitate to contact me.

Sincerely yours,

Chester Wichowski,
Director

/ma
encl.

The New Jersey Vocational-Technical Curriculum Laboratory
A Service of the Division of Vocational Education and Career Preparation – New Jersey Department of Education

RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY

GRADUATE SCHOOL OF EDUCATION • DEPARTMENT OF VOCATIONAL-TECHNICAL EDUCATION
CURRICULUM LABORATORY • BUILDING 4103 • KILMER CAMPUS • NEW BRUNSWICK • NEW JERSEY 08903 • (201) 932-3845/3847

In a recent survey of Career Education Coordinating Council members, the following vocational programs were identified as being particularly important in the next five years. Importance, in this survey, was denoted by a frequency rate equal to or greater than one standard deviation above the mean. In order to help us further delimit this list, please accomplish the following:

1. Review the entire list. (Front & back)
2. Rate each program as to the level of need (see legend below).
3. For those programs that you have rated either a five (5) or a one (1), please give a brief reason in the space provided.

Thank you for your assistance.

COUNTY REPRESENTED _____

Legend

5 - Critical need
4 - Above average need
3 - Average need
2 - Below average need
1 - Not needed

VOCATIONAL PROGRAMS	NEED RATING	REASON FOR "CRITICAL" and/or "NOT NEEDED" RATING
Special Needs		
Auto Mechanics		
Construction/Building Trades		
Maintenance Mechanic		
Secondary		
Air Conditioning & Refrigeration		
Auto Mechanics		
Business Data Processing		
Child Care & Guidance		
Computer Technology		
Construction/Building Trades		
Diesel Mechanics		

OVER

VOCATIONAL PROGRAMS	NEED RATING	REASON FOR "CRITICAL" and/or "NOT NEEDED" RATING
Distributive Education		
Electronics		
Health Occupations		
Machine Shop		
Maintenance Mechanic		
Medical Technology		
Office/Clerical Occupations		
Secretarial		
Solar Energy		
Post Secondary		
Auto Mechanics		
Business Data Processing		
Computer Technology		
Diesel Mechanics		
Electronic Repair		
Health Occupations		
Medical Technician		
Nuclear Powerplant Operator		
Nursing (RN)		
Secretarial		
Solar Energy		
Other (State reason)		

CURRICULUM RATING SCHEDULE
New Jersey Statewide Curriculum Development Project

Program Title_____ VEDS No._____Level of Delivery S___PS___

NUMERICAL VALUE

1	2	3	4
0 - 20%	21 - 50%	51 - 80%	81 - 100%

PERCENTAGE OF CHARACTERISTIC

____1. The materials contain objectives which include conditions, performances and criteria.

____2. The materials contain a system for evaluating students' performances, including tests and/or performance checklist that directly measure mastery of the objectives.

____3. The content covered in the materials is current and includes all the necessary knowledge, skills and attitudes.

____4. The materials are free of sex bias.

____5. The materials are accompanied by adequate instructor management information such as record-keeping forms, course sequencing, and directions for implementation.

____6. The materials are structured well enough and provide enough student directions to facilitate open-entry/open-exit, self-pacing and individualization.

____7. The materials are organized to permit a progression of employable skill development throughout the entire program.

____8. The materials are designed to facilitate integral record-keeping in relation to the Individualized Educational Program (IEP).

____9. The materials contain a system for continuous formative evaluation that facilitates communication with the I.E.P. Team.

___10. The materials contain prerequisite levels of cognitive, psychomotor, affective and perceptual skills necessary for successful entry into each instructional unit.

___11. The materials provide for prescriptive teaching techniques, alternative instructional materials, and individualized student learning activities that lend themselves to disparate learning styles.

___12. The materials have been field-tested with normal populations.

___13. The materials have been field-tested with handicapped populations.

___14. The materials have been field-tested with disadvantaged populations.

___15. The materials have been field-tested with gifted populations.

Primary Text:_____
(Author) (Title) (Copyright)

Origin of Curriculum Materials:_____
(date of origin - revision)

COMMENTS:

APPENDIX B

DEMOGRAPHIC IMPORTANCE AND EDUCATIONAL NEED

DATA BASE COMPUTATIONS

TABLE 6
DATA BASE AND DEMOGRAPHIC IMPORTANCE FACTOR DEVELOPMENT IN BUSINESS EDUCATION
SECONDARY LEVEL

PROGRAM SPECIFIC TITLE	OE/VEDS Code No.	RAW DATA JMD	ENROLL	PLACE	WAGE	DIS	HAND	LIM-ENG
Computer & Console Op.	14.0201	370	189	—	267.08	1	29	8
Programmers	14.0203	430	76	--	350.30	0	5	0
Business Data Proc.,Other	14.0299	50	593	--	210.58	5	151	26
Filing,Off. Mach.& Gen. Off.	14.0300	5,134	2,489	--	165.40	45	448	117
Steno, Secy. & Related	14.0700	11,353	2,329	--	236.71	31	321	63
Typing & Related Occ.	14.0900	3,059	1,825	--	183.00	28	369	50

		NORMALIZED DATA W(28.85)	W(20.81)	W(17.59)	W(10.71)	W(8.65)	W(8.63)	W(4.82)	Demographic Importance Score	Factor Rank
Computer & Console Op.	14.0201	.03	.08	--	.76	.02	.06	.07	11.69	6
Programmers	14.0203	.04	.03	--	1.00	0	.01	0	12.57	5
Business Data Proc.,Other	14.0299	.01	.24	--	.60	.11	.34	.22	16.65	4
Filing,Off.Mach. & Gen. Off.	14.0300	.45	1.00	--	.47	1.00	1.00	1.00	60.93	2
Steno, Secy. & Related	14.0700	1.00	.94	--	.67	.69	.72	.54	70.37	1
Typing & Related Occ.	14.0900	.28	.73	--	.39	.62	.82	.43	41.96	3

TABLE 7
DATA BASE AND DEMOGRAPHIC IMPORTANCE FACTOR DEVELOPMENT IN BUSINESS EDUCATION:
POST-SECONDARY LEVEL

PROGRAM SPECIFIC TITLE	OE/VEDS Code No.	RAW DATA JMD	ENROLL	PLACE	WAGE	DIS	HAND	LIM-ENG
Computer & Console Op.	14.0201	370	6,359	--	267.08	0	0	2
Programmers	14.0203	430	9,168	--	350.30	0	0	6
Bus. Data Proc., Other	14.0299	50	7,500	--	210.58	0	99	24
Steno, Secy. & Other	14.0700	11,353	7,716	--	236.71	0	60	8
Typing & Related Occ.	14.0900	3,059	7,688	--	183.00	0	124	13

		NORMALIZED DATA W(28.85)	W(20.81)	W(17.59)	W(10.71)	W(8.65)	W(8.63)	W(4.82)	Demographic Importance Score	Factor Rank
Computer & Console Op.	14.0201	.03	.69	--	.76	0	0	.04	23.58	5
Programmers	14.0203	.04	1.00	--	1.00	0	0	.25	33.88	4
Bus. Data Proc., Other	14.0299	.01	.82	--	.60	0	.80	1.00	35.50	3
Steno, Secy. & Other	14.0700	1.00	.84	--	.67	0	.48	.33	59.24	1
Typing & Related Occ.	14.0900	.28	.84	--	.39	0	1.00	.54	40.97	2

TABLE 8

DATA BASE AND DEMOGRAPHIC IMPORTANCE FACTOR DEVELOPMENT IN VOCATIONAL INDUSTRIAL EDUCATION: SECONDARY

PROGRAM SPECIFIC TITLE	OE/VEDS Code No.	RAW DATA JMD	ENROLL	PLACE	WAGE	DIS	HAND	LIM-ENG
Auto Mechanics	17.0302	1,337	2,948	--	222.00	78	771	139
Diesel Mechanics	17,1200	608	475	--	222.50	10	105	3
Electronics Occupations	17.1500	475	730	--	294.25	9	198	39
Solar Energy Cluster ($\bar{X}$)	---	396	324	--	383.73	5	77	9
1. Plumbing & Pipefitting	17.1007	670	323	--	455.19	6	71	10
2. Electrical Occupations	17.1400	218	586	--	340.60	6	152	16
3. Stationary Energy Occ.	17.3200	302	65	--	356.00	3	9	1
Scientific Data Processing	16.0117	405	25	--	357.30	0	1	0

		NORMALIZED DATA W(28.85)	W(20.81)	W(17.59)	W(10.71)	W(8.65)	W(8.63)	W(4.82)	Demographic Importance Factor Score	Rank
Auto Mechanics	17.0302	1.00	1.00	--	.57	1.00	1.00	1.00	77.86	1
Diesel Mechanics	17.1200	.45	.16	--	.57	.13	.14	.02	24.83	3
Electronics Occupations	17.1500	.35	.25	--	.77	.12	.26	.28	28.17	2
Solar Energy Cluster ($\bar{X}$)	---	.30	.11	--	1.00	.06	.10	.06	23.33	4
1.Plumbing & Pipefitting	17.1007	---	---	--	---	---	---	---	---	--
2.Electrical Occupations	17.1400	---	---	--	---	---	---	---	---	--
3.Stationary Energy Occ.	17.3200	---	---	--	---	---	---	---	---	--
Scientific Data Processing	16.0017	.30	.01	--	.93	0	.001	0	18.84	5

TABLE 9

DATA BASE AND DEMOGRAPHIC IMPORTANCE FACTOR DEVELOPMENT IN VOCATIONAL INDUSTRIAL EDUCATION: POST SECONDARY

PROGRAM SPECIFIC TITLE	OE/VEDS Code No.	RAW DATA JMD	ENROLL	PLACE	WAGE	DIS	HAND	LIM-ENG
Auto Mechanics	17.0302	1,337	9,942	---	222.00	4	65	31
Diesel Mechanics	17.1200	608	9,439	---	222.50	1	2	0
Electronics Occupations	17.1500	475	10,938	---	294.25	0	11	1
Solar Energy Cluster ($\bar{X}$)	--	396	9,367	---	383.73	1	2	2
1. Plumbing & Pipefitting	17.1007	670	9,298	---	455.19	1	5	2
2. Electrical Occupations	17.1400	218	9,591	---	340.60	0	0	1
3. Stationary Energy Occ.	17.3200	302	9,214	---	356.00	0	0	1
Scientific Data Processing	16.0117	405	11,859	---	357.30	0	0	0

		NORMALIZED DATA W(28.85)	W(20.81)	W(17.59)	W(10.71)	W(8.65)	W(8.63)	W(4.82)	Demographic Importance Factor Score	Rank
Auto Mechanics	17.0302	1.00	.84	---	.57	1.00	1.00	1.00	[illegible].53	1
Diesel Mechanics	17.1200	.45	.79	---	.57	.25	.03	0	37.94	5
Electronics Occupations	17.1500	.35	.92	---	.77	0	.17	.03	39.10	3
Solar Energy Cluster ($\bar{X}$)	--	.30	.79	---	1.00	.25	.03	.03	38.36	4
1. Plumbing & Pipefitting	17.1007	---	---	---	---	---	---	---	---	-
2. Electrical Occupations	17.1400	---	---	---	---	---	---	---	---	-
3. Stationary Energy Occ.	17.3200	---	---	---	---	---	---	---	---	-
Scientific Data Processing	16.0117	.30	1.00	---	.93	0	0	0	39.43	2

TABLE 10

DATA BASE AND DEMOGRAPHIC IMPORTANCE FACTOR DEVELOPMENT IN HEALTH OCCUPATIONS EDUCATION: SECONDARY LEVEL

PROGRAM SPECIFIC TITLE	OE/VEDS Code No.	RAW DATA JMD	ENROLL	PLACE	WAGE	DIS	HAND	LIM-ENG
Dental Assistant	07.0101	533	318	--	151.74	2	55	5
Nursing Assistant	07.0303	2,449	349	--	137.80	40	137	9
Medical Assistant	07.0904	265	166	--	229.60	2	32	8
Other Health Occ. Ed.	07.9900	1,715	203	--	219.60	15	95	9

		NORMALIZED DATA W(28.85)	W(20.81)	--	W(10.71)	W(8.65)	W(8.63)	W(4.82)	Demographic Importance Score	Factor Rank
Dental Assistant	07.0101	.22	.91	--	.66	.05	.40	.55	38.89	3
Nursing Assistant	07.0303	1.00	1.00	--	.60	1.00	1.00	1.00	78.19	1
Medical Assistant	07.0904	.11	.47	--	1.00	.05	.23	1.00	30.89	4
Other Health Occ. Ed.	07.9900	.70	.58	--	.96	.38	.69	.88	55.33	2

TABLE 11
DATA BASE AND DEMOGRAPHIC IMPORTANCE FACTOR DEVELOPMENT IN HEALTH OCCUPATIONS EDUCATION:
POST-SECONDARY LEVEL

PROGRAM SPECIFIC TITLE	OE/VEDS Code No.	RAW DATA JMD	ENROLL	PLACE	WAGE	DIS	HAND	LIM-ENG
Dental Assistant	07.0101	533	1,636	--	151.74	0	52	4
Dental Lab. Assistant	07.0103	80	1,460	--	255.20	0	0	0
Nursing RN	07.0301	2,960	3,227	--	279.67	0	0	0
Practical Nursing	07.0302	1,974	2,824	--	190.38	1	170	22
Medical Assistant	07.0904	265	1,676	--	229.60	0	5	0

		NORMALIZED DATA W(28.85)	W(20.81)	--	W(10.71)	W(8.65)	W(8.63)	W(4.82)	Demographic Importance Factor Score	Rank
Dental Assistant	07.0101	.18	.51		.54	0	.30	.18	30.04	3
Dental Lab Assistant	07.0103	.03	.45		.91	0	0	0	19.98	5
Nursing RN	07.0301	1.00	1.00		1.00	0	0	0	60.37	2
Practical Nursing	07.0302	.67	.88		.68	1.00	1.00	1.00	67.02	1
Medical Assistant	07.0904	.09	.52		.82	0	.03	0	22.36	4

TABLE 12
COMPUTATIONAL DATA BASE FOR BUSINESS EDUCATION:
SECONDARY LEVEL

PROGRAM SPECIFIC TITLE	OE/VEDS Code No.	RAW DATA JMD	ENROLL	PLACE	WAGE	DIS	HAND	LIM-ENG
Computer Op	14.0201	370	189	--	267.08	1	29	8
Programmers	14.0203	430	76	--	350.30	0	5	0
Bus Data Proc, Oth	14.0299	50	593	--	210.58	5	151	26
File & Gen Off	14.0300	5,134	2,489	--	165.40	45	448	117
Steno, Secy & Rel	14.0700	11,353	2,329	--	236.71	31	321	63
Typing & Rel	14.0900	3,059	1,825	--	183.00	28	369	50

		NORMALIZED DATA W(28.85)	W(20.81)	--	W(10.71)	W(8.65)	W(8.63)	W(4.82)	Demographic Importance Score	Educ. Need Score	Total	Rank
Computer	14.0201	.03	.08	--	.76	.02	.06	.07	11.69	1.53	17.89	6
Programmers	14.0203	.04	.03	--	1.00	0	.01	0	12.57	1.67	20.99	5
Bus Data Proc, Oth	14.0299	.01	.24	--	.60	.11	.34	.22	16.65	1.79	29.80	4
File & Gen Off	14.0300	.45	1.00	--	.47	1.00	1.00	1.00	60.93	1.59	96.88	2
Steno, Secy & Rel	14.0700	1.00	.94	--	.67	.69	.72	.54	70.37	1.65	116.11	1
Typing & Rel	14.0900	.28	.73	--	.39	.62	.82	.43	41.96	1.53	64.20	3

TABLE 13
COMPUTATIONAL DATA BASE FOR BUSINESS EDUCATION:
POST-SECONDARY LEVEL

PROGRAM SPECIFIC TITLE	OE/VEDS Code No.	RAW DATA JMD	ENROLL	PLACE	WAGE	DIS	HAND	LIM-ENG
Computer Op	14.0201	370	6,359	--	267.08	0	0	2
Programmers	14.0203	430	9,168	--	350.30	0	0	6
Bus Data Proc, Oth	14.0299	50	7,500	--	210.58	0	99	24
Steno, Secy & Rel	14.0700	11,353	7,716	--	236.71	0	60	8
Typing & Rel	14.0900	3,059	7,688	--	183.00	0	124	13

		NORMALIZED DATA W(28.85)	W(20.81)	--	W(10.71)	W(8.65)	W(8.63)	W(4.82)	Demographic Importance Score	Educ. Need Score	Total	Rank
Computer Op	14.0201	.03	.69	--	.76	0	0	.04	23.58	1.53	36.08	5
Programmers	14.0203	.04	1.00	--	1.00	0	0	.25	33.88	1.67	56.58	4
Bus Data Proc, Oth	14.0299	.01	.82	--	.60	0	.80	1.00	35.50	1.79	63.55	2
Steno, Secy & Oth	14.0700	1.00	.84	--	.67	0	.48	.33	59.24	1.65	97.75	1
Typing & Rel	14.0900	.28	.84	--	.39	0	1.00	.54	40.97	1.53	62.68	3

TABLE 14

COMPUTATIONAL DATA BASE FOR HEALTH OCCUPATIONS EDUCATION: SECONDARY LEVEL

PROGRAM SPECIFIC TITLE	OE/VEDS Code No.	RAW DATA JMD	ENROLL	PLACE	WAGE	DIS	HAND	LIM-ENG
Dent Asst	07.0101	533	318	--	151.74	2	55	5
Nurse Asst	07.0303	2,449	349	--	137.80	40	137	9
Med Asst	07.0904	265	166	--	229.60	2	32	8
Other H.O.E.	07.9900	1,715	203	--	219.60	15	95	9

		NORMALIZED DATA W(28.85)	W(20.81)	--	W(10.71)	W(8.65)	W(8.63)	W(4.82)	Demographic Importance Score	Educ. Need Score	Total	Rank
Dent Asst	07.0101	.22	.91	--	.66	.05	.40	.55	38.89	1.68	65.34	2
Nurse Asst	07.0303	1.00	1.00	--	.60	1.00	1.00	1.00	78.19	1.29	100.87	1
Med Asst	07.0904	.11	.47	--	1.00	.05	.23	1.00	30.89	1.55	47.88	4
Other H.O.E.	07.9900	.70	.58	--	.96	.38	.69	.88	55.33	1.03	56.99	3

TABLE 15
COMPUTATIONAL DATA BASE FOR HEALTH OCCUPATIONS EDUCATION:
POST-SECONDARY LEVEL

PROGRAM SPECIFIC TITLE	OE/VEDS Code No.	RAW DATA JMD	ENROLL	PLACE	WAGE	DIS	HAND	LIM-ENG
Dent Asst	07.0101	533	1,636	--	151.74	0	52	4
Dent Lab Asst	07.0103	80	1,460	--	255.20	0	0	0
RN	07.0301	2,960	3,227	--	279.67	0	0	0
LPN	07.0302	1,974	2,824	--	190.38	1	170	22
Med Asst	07.0904	265	1,676	--	229.60	0	5	0

		NORMALIZED DATA W(28.85)	W(20.81)	--	W(10.71)	W(8.65)	W(8.63)	W(4.82)	Demographic Importance Score	Educ. Need Score	Total	Rank
Dent Asst	07.0101	.18	.51		.54	0	.30	.18	30.04	1.68	50.47	2
Dent Lab Asst	07.0103	.03	.45		.91	0	0	0	19.98	1.30	25.97	4
RN	07.0301	1.00	1.00		1.00	0	0	0	60.37	--	--	-
LPN	07.0302	.67	.88		.68	1.00	1.00	1.00	67.02	1.65	110.58	1
Med Asst	07.0904	.09	.52		.82	0	.03	0	22.36	1.55	34.66	3

TABLE 16
COMPUTATIONAL DATA BASE FOR VOCATIONAL INDUSTRIAL EDUCATION:
SECONDARY LEVEL

PROGRAM SPECIFIC TITLE	OE/VEDS Code No.	RAW DATA JMD	ENROLL	PLACE	WAGE	DIS	HAND	LIM-ENG
Auto Mech	17.0302	1,337	2,948	--	222.00	78	771	139
Diesel Mech	17.1200	608	475	--	222.50	10	105	3
Electronics	17.1500	475	730	--	294.25	9	198	39
Solar Cluster ($\bar{X}$)	--	396	324	--	383.73	5	77	9
1. Plumb & Pipe	17.1007	670	323	--	455.19	6	71	10
2. Electrical	17.1400	218	586	--	340.60	6	152	16
3. Stationary Eng.	17.3200	302	65	--	356.00	3	9	1
Sci Data Proc	16.0117	405	25	--	357.30	0	1	0

		NORMALIZED DATA W(28.85)	W(20.81)	--	W(10.71)	W(8.65)	W(8.63)	W(4.82)	Demographic Importance Score	Educ. Need Score	Total	Rank
Auto Mech	17.0302	1.00	1.00	--	.57	1.00	1.00	1.00	77.86	1.74	135.48	1
Diesel Mech	17.1200	.45	.16	--	.57	.13	.14	.02	24.83	2.22	55.12	2
Electronics	17.1500	.35	.25	--	.77	.12	.26	.28	28.17	1.74	49.02	4
Solar Cluster ($\bar{X}$)	--	.30	.11	--	1.00	.06	.10	.06	23.33	2.21	51.56	3
1. Plumb & Pipe	17.1007	--	--	--	--	--	--	--	--			
2. Electrical	17.1400	--	--	--	--	--	--	--	--			
3. Stationary Eng.	17.3200	--	--	--	--	--	--	--	--			
Sci Data Proc	16.0017	.30	.01	--	.93	0	.001	0	18.84	2.18	41.07	5

TABLE 17
COMPUTATIONAL DATA BASE FOR VOCATIONAL INDUSTRIAL EDUCATION:
POST SECONDARY

PROGRAM SPECIFIC TITLE	OE/VEDS Code No.	RAW DATA JMD	ENROLL	PLACE	WAGE	DIS	HAND	LIM-ENG
Auto Mech	17.0302	1,337	9,942	--	222.00	4	65	31
Diesel Mech	17.1200	608	9,439	--	222.50	1	2	0
Electronics	17.1500	475	10,938	--	294.25	0	11	1
Solar Cluster ($\bar{X}$)	--	396	9,367	--	383.73	1	2	2
1. Plumb & Pipe	17.1007	670	9,298	--	455.19	1	5	2
2. Electrical	17.1400	218	9,591	--	340.60	0	0	1
3. Stationary Eng.	17.3200	302	9,214	--	356.00	0	0	1
Sci Data Proc	16.0117	405	11,859	--	357.30	0	0	0

		NORMALIZED DATA W(28.85)	W(20.81)	--	W(10.71)	W(8.65)	W(8.63)	W(4.82)	Demographic Importance Score	Educ. Need Score	Total	Rank
Auto Mech	17.0302	1.00	.84	--	.57	1.00	1.00	1.00	74.53	1.74	129.68	1
Diesel Mech	17.1200	.45	.79	--	.57	.25	.03	0	37.94	2.22	84.23	4
Electronics	17.1500	.35	.92	--	.77	0	.17	.03	39.10	1.74	68.03	5
Solar Cluster ($\bar{X}$)	--	.30	.79	--	1.00	.25	.03	.03	38.36	2.21	84.78	3
1. Plumb & Pipe	17.1007	--	--	--	--	--	--	--	--			
2. Electrical	17.1400	--	--	--	--	--	--	--	--			
3. Stationary Eng	17.3200	--	--	--	--	--	--	--	--			
Sci Data Proc	16.0117	.30	1.00	--	.93	0	0	0	39.43	2.18	85.96	2

APPENDIX C

AD HOC FINDINGS

TABLE 18
LISTING OF TEXTBOOKS AND ORIGIN OF CURRICULUM MATERIALS
IDENTIFIED THROUGH SITE VISITATION REVIEW IN BUSINESS EDUCATION

COMPUTER & CONSOLE OPERATOR 14.0201

Primary Texts

Author	Title	Copyright
Dwyer & Kaufman	Computer Programming in BASIC for Everyone	1977
Dwyer & Critchfield	Basic & Personal Computer	1978
Fuori	Cobol: Intro to	1975
Silver & Silver	Simplified BASIC programming	1974
Singer	Programming BASIC	1973
Wanous, et al	Fundamentals of Data Processing	1971

Origin of Curriculum Materials: Teacher; 1980

PROGRAMMERS 14.0203

Primary Texts

Author	Title	Copyright
Albrecht	Teach Yourself Basic, Vol. I & II	1976
Anderson	Computer Programming - Fortran IV	1966
Coan, J.	BASIC BASIC	1975
IBM	System 3, RPG II Programming Fundamentals Text	1976

Supplemental Texts

Luter & Johnson	Mathematics Oriented Computer Programming	----
Digital Equip. Corp.	OS/8	----
Haag	Standard Fortran Programming	1972
Game & O'Donnell	Computer Programming: An Individualized Course In Fortran IV	1971 ----

Origin of Curriculum Materials: Teacher; 1976, 1975, 1972

BUSINESS DATA PROC., OTHER 14.0299

Primary Texts

Author	Title	Copyright
Ellis, B.	Word Processing: Concepts & Applications	1980
Fisher	An Intro to RPG I - RPG II Programming	1975
Fuori	Intro to COBOL	1975
Kahn, G.	Business Data Processing	----
Robichano, et al	Intro to Data Processing	1977
Spencer, Donald	Data Processing: An Introduction	1978
Sterns	Business Data Processing	----
Wanous, et al	Fundamentals of Data Processing	1971

Supplemental Texts

Bux	Keypunch Training Course	1975
Carter, et al	Data Entry Skills - Key Disk Machine	1977
Cushman & Keys	Data Processing: A Text & Project Manual	1967
Kapor	Programming in Standard COBOL	1973
Radio Shack	TRSDOS & DISK BASIC Reference Manual	----
Wendel	Intro to Data Processing: A Text & Project Manual	1967

Origin of Curriculum Materials: Teacher; 1980, 1979, 1978

STENO, SECY & RELATED 14.0700

Primary Texts

Author	Title	Copyright
Gregg	Diamond Jubilee	1971
Gregg	Series 90	1978
Anderson, et al	The Administrative Secretary	1970
Christensen, Bell	Century 21 Shorthand	1974
Fries, et al	Applied Secretarial Procedures	1974
Leslie, Zoubek	Gregg Shorthand, Functional Method	1963
Oliverio & Pasework	Secretarial Office Procedures	1977

Supplemental Texts

Haggblade, Oliverio	Century 21 Shorthand, Intensive Dictation/ Transcription	----
	Workbook - Self Paced Learning Activities	1974

Origin of Curriculum Materials: Teacher; 1980, 1979, 1978, 1973, 1972

TYPING & RELATED OCCUPATIONS 14.0900

Primary Texts

Author	Title	Copyright
Lessenberry, et al	Century 21 Typewriting	1977
Lessenberry	Introductory Typewriting	1975
Lloyd, et al.	Gregg Typing, Series 6, Typing 1-2	1977
Mach, et al.	Typewriting: A Mastery Approach	1978

Supplemental Texts

Atkinson	Typewriting Office Practice	----
Axelrod	Creative Fixed Writings	1975
Fries & Clayton	Timed Writings About Careers 2nd Ed	1975
Moon	Typing from Rough Drafts	1978
Schacter, Clark	English the Easy Way	1975
	Teacher produced learning guides	----

Origin of Curriculum Materials: Teacher; 1980, 1979, 1978, 1972
Textbook; Gregg Series 6, 1977

FILING, OFFICE MACH. & GENERAL OFFICE 14.0300

Primary Texts

Author	Title	Copyright
Agnew, et al	Clerical Office Practice (4th ed)	1978
Archer, et al	General Office Procedures	1975
Meehan, et al	Clerical Office Procedures	1973
Oliverio & Pasewark	Secretarial Office Procedures (9th ed)	----
Oliverio & Pasewark	Clerical Office Procedures (6th ed)	1978

Supplemental Texts

Bux	Keypunch Training	1975
Bredow	Medical Office Procedures	----
Frasnacht, et al	How to Use Business Machines (Gregg, 1969)	----
	Gregg Quick Filing Practice	----
Cornelia & Pasewark	Office Machines Course	1979
	Lester [illegible] Office Simulations	----
Hass	Data Processing Vol. 2 (Memory Typewriting)	----
Kahn, et al	Progressive Filing	1969
Pasewark	Electronic & Mechanical Printing -	1974
	Calculator Course	----
Pasewark	Duplicating Machine Processes	1975
White	Learning Guides for Office Ed (devel. by W. Deptford H.S.)	----
Wood	You Are a Data Processor	1972

Origin of Curriculum Materials: Teacher; 1980, 1979, 1978, 1975

TABLE 19
LISTING OF TEXTBOOKS AND ORIGIN OF CURRICULUM MATERIALS
IDENTIFIED THROUGH SITE VISITATION REVIEW IN
HEALTH OCCUPATIONS EDUCATION

DENTAL ASSISTANT 07.0101

Primary Texts

Author	Title	Copyright
Anderson	The Dental Assistant	1974
Schwarzrock/Jensen	Effective Dental Assisting	1978,1973

Supplemental Text

Douglas	Secretarial Dental Assistant	1976

Origin of Curriculum Materials: Teacher; 1980, 1979

DENTAL LABORATORY ASSISTANT 07.0103

Primary Text

Author	Title	Copyright
Sowter (Ed.)	Dental Laboratory Technology	1967

Origin of Curriculum Materials: Teacher; 1981

NURSING ASSISTANT 07.0303

Primary Text

Author	Title	Copyright
Donovan, Joan, E. & et al	The Nurse Assistant	1978
Hosp. Research & Educ. Trust	Being A Nurse Aid	1978
Riehl	Family Nursing & Child Care	1966

Origin of Curriculum Materials: Teacher; 1980, 1979, 1978

MEDICAL ASSISTANT 07.0904

Primary Texts

Author	Title	Copyright
Atkinson, B.J.	The Medical Assistant	1976
Memler & Rada	The Human Body in Health & Disease	1970

Origin of Curriculum Materials: Teacher; 1980

PRACTICAL NURSING (LPN) 07.0302

Primary Texts

Author	Title	Copyright
Hood & Dineher	Total Patient Care	1980
Memler, et al	The Human Body in Health & Disease (4th Ed.)	1977
Wolff, Weitzel, & Fuerst	Fundamentals of Nursing	1979

Supplemental Texts

Sherer	Introductory Medical/Surgical Nursing	1977
	Workbook goes with Memler Text	----

Origin of Curriculum Materials: Teacher; 1979, 1975

OTHER HEALTH OCCUPATIONS EDUCATION 07.9900

Primary Texts

Author	Title	Copyright
Caldwell, et al	Health Assistant	1980
Hosp. Research & Educ. Trust	Being A Housekeeping Aide	1967

Supplemental Text

Hall, et al	Business Admin. for the Medical Asst.	1974

Origin of Curriculum Material: Teacher; 1980, 1979

TABLE 20
LISTING OF TEXTBOOKS AND ORIGIN OF CURRICULUM MATERIALS
IDENTIFIED THROUGH SITE VISITATION REVIEW IN
VOCATIONAL INDUSTRIAL EDUCATION

AUTO MECHANICS 17.0302

Primary Texts

Author	Title	Copyright
Crouse, W.H.	Automotive Mechanics	1980
Crouse, W.H.	Automotive Mechanics - 7th Ed.	1975
Crouse, W.H.	The Auto Book	1974
Glenn, H.	Auto Mechanics	1976
Glenn, H.	Auto Mechanics	1969
Kuns & Duvall	Automotive Essentials	1966
Stephenson, G.E.	Small Gasoline Engines	1973
Stockel	Auto Mechanics	1963
Stockel	Auto Service Series	1969
Stockel	Auto Mechanics Fundamentals	1974, 1978
Stockel	Auto Service and Repair	1975
Toboldt & Johnson	Automotive Encyclopedia	1975

Supplemental Texts

Dwiggins	Automotive Safety & Changing Systems	1976
Milligam	AV Materials	----

Origin of Curriculum Materials: Teacher; 1980, 1979, 1973

DIESEL MECHANICS 17.1200

Primary Texts

Author	Title	Copyright
Kates, et al	Diesel and High Compression Gasoline Engines (workbook accompanies text)	1974
Schulz	Diesel Mechanics	1977
Taboldt	Diesel	1973

Origin of Curriculum Materials: Teacher; 1980, 1974

ELECTRONICS 17.1500

Primary Texts

Author	Title	Copyright
Bauban, Marshall & Schmitt	Understanding Electricity and Electronics 3rd Ed.	1975
Bureau of Naval Personnel	Basic Electricity	1970
DeVito, M.	Intro to Electricity & Electronics	1974
Fowler, R.J.	Electricity - Series	1979
Gerrish	Exploring Electronics	1971
Grob	Basic Electronics	1977
Heathkit Continuing Ed.	DC Electronics (Individualized Learning Program)	1975
Lab Volt Educ. Systems	Introduction to Electricity & Electronics	1974
Schuler, C.A.	Electronics - Principles & Applications	1979

Supplemental Texts

Gerrish	Electricity & Electronics	1964, 1968
Lab Volt	Learning Experiences in Transistors & Semiconductors	1977
	Graymark Kits	----

Origin of Curriculum Materials: Teacher; 1980, 1979, 1974, 1973
Commercial; Lab Volt, 1977

SOLAR ENERGY - PLUMBING & PIPEFITTING 17.1007

Primary Text

Author	Title	Copyright
Slater, Harry	Plumbing I & II	1974

Origin of Curriculum Materials: Teacher; 1974

SOLAR ENERGY - ELECTRICAL OCCUPATIONS 17.1400

Primary Texts

Kubala, Thomas S.	Electricity 1, 2, 3, 4	1974
Mullin & Smith	Electrical Wiring: Commercial/Residential	1978

Origin of Curriculum Materials: Teacher; 1979, 1976, 1973

SOLAR ENERGY - STATIONARY ENERGY SOURCES OCCUPATIONS 17.3200

Primary Texts

Author	Title	Copyright
Burkhardt	Domestic & Commercial Oil Burners	1961
Shields, C.D.	Boilers: Types, Characteristics & Functions	1961

SCIENTIFIC DATA PROCESSING 16.0117

Primary Texts

Shelly & Cashman	Intro to Computer and Data Processing	1980
Wanous, Wagner, Hallam	Intro to Automated Data Processing	1979

Origin of Curriculum Materials: Teacher; 1981